News Releases

NHRC Researcher Studies Impact of Operational Postures on Low Back Pain

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(Photo courtesy of Naval Health Research Center)

Recent research from Naval Health Research Center's Warfighter Performance Department found that the sitting position was associated with high rates of low back pain (LBP) and disc degeneration among U.S. service members who participated in the study. Research findings were recently published in the January issue of the Journal of Orthopaedic Research.

According to researchers, in 2013 there were over 975,000 military medical encounters due to back pain, more than any other major medical condition, and the Veterans Health Administration has also noted an increasing trend of LBP in recent years.

Previous studies have shown an association with increased rates of intervertebral disc (IVD) degeneration and increased military service, time, and age among U.S. service members. Past research also found individuals with IVD have been shown to have a higher incidence of LBP.

The purpose of the current study, "Lumbar Spine Postures in Marines During Simulated Operational Positions," was to investigate changes in service members' lumbar spine posture in operationally relevant positions while carrying minimal gear and equipment. Another goal was to identify posture profiles to identify service members at risk for developing LBP.

Researchers evaluated 43 active duty male Marines who volunteered for the study. Surveys were administered to classify daily physical activity, assess the level of LBP, and evaluate the impact of LBP on everyday activities.

Service members in the study, who have physically demanding jobs, self-reported that sitting,

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standing for extended periods of time, and hiking with a pack resulted in increased LBP. Study participants reported they often experienced prolonged sitting in tactical vehicles and helicopters, which suggests low back pain may be attributable to occupational and training demands in this population.

Additionally, the participants were scanned using an upright magnetic resonance image (MRI) scanner to evaluate the lumbar spine in standing, sitting, and prone on elbows positions. The standing position was scanned with and without body armor, which is the minimum protective gear Marines are required to wear at all times during military operations and training.

Researchers found that Marines in the study who had disc degeneration (77 percent) or a history of LBP (72 percent) had decreased range of motion and less extension in their lower back than healthy Marines. Study findings suggest that postural changes during operational tasks may impair performance.

According to study authors, current results provide a framework for future initiatives to develop postural interventions aimed at reducing LBP and, possibly, mitigating risk factors for LBP associated with operational tasks. Future studies on LBP and disc degeneration in service members should focus on managing the distribution of load.

The Warfighter Performance Department

Karen Kelly, Ph.D., leads the Applied Translational Exercise and Metabolic Physiology Team in the Warfighter Performance Department NHRC. The team supports modern special forces operators, expeditionary forces, and ground combat troops with operationally relevant research that focuses on enhancing performance, preventing injury, and validating training and performance standards for meeting occupational demands.

The Publication

https://www.ncbi.nlm.nih.gov/pubmed/28052435

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As the DoD's premier deployment health research center, NHRC's cutting-edge research and development is used to optimize the operational health and readiness of the nation's armed forces. In proximity to more than 95,000 active duty service members, world-class universities, and industry partners, NHRC sets the standard in joint ventures, innovation, and translational research.

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